BLI

Lab Test Report

Canon imageFORMULA DR-M160

60 PPM (120 IPM)

BUYERS LABORATORY
2011
BLI
HIGHLY RECOMMENDED
LAB TESTED

Reliability	Excellent
Media Handling	Very Good
Ease of Setup	Good
Drivers/Software	Excellent
Workflow Analysis	Very Good
Image Processing Features	Very Good
Hardware Ease of Use	Very Good
Ease of User Maintenance	Very Good
Productivity	Good
File Size	Very Good
OCR Performance	Good
Footprint	Good
Value	Excellent
Estimated Cost per Scan	0.062¢

BLI RECOMMENDATION

During BLI's extensive lab evaluation, the Canon imageFORMULA DR-M160 demonstrated better than average results in the majority of categories tested. The scanner accepts a variety of document types, including thick embossed cards, business cards, checks and multi-part forms, but goes beyond the typical with its Thin Paper, Folio and Long Document modes. Additional features include background smoothing, de-skew, shadow cropping and an automatic resolution setting. Up to nine customizable scan profiles can be accessed at the scanner's control panel, and the driver's Full Auto Mode activates all scan features with one click. The unit also offers a lower than average total cost of ownership and a lower than average cost per scan. Based on its above average overall performance, BLI highly recommends the Canon imageFORMULA DR-M160 for offices and departments looking for a productive, feature-rich document scanner at an affordable price.

Test duration: Two weeks, 35,000 scans

Daily duty cycle: 7,000 scans

STRENGTHS

- Highly reliable
- Lower than average TCO
- Scans long documents up to 118.1", which may be helpful for medical offices
- Smaller than average color file sizes when scanning multiple pages
- Optional flatbed accessory allows users to scan delicate or odd-shaped documents
- Folio Mode helps scan A3-size documents
- Up to nine customizable scan profiles available from the scanner's control panel
- Double Feed Release feature lets users ignore or fix double feeds with the touch of a button
- Above average OCR accuracy when scanning BLI's Black test document at 200 dpi
- Full Auto Mode activates all scan settings with the click of a button

WEAKNESSES

- Below average OCR accuracy when scanning BLI's Green and Red test documents at 200 dpi
- Below average ADF capacity
- Larger than average black-and-white file sizes when scanning multiple pages

TEST RESULTS AND OBSERVATIONS

+, − and ○ represent positive, negative and neutral attributes, respectively.

RELIABILITY   EXCELLENT

+ The Canon imageFORMULA DR-M160 scanned 35,000 pages in BLI's tests with just two misfeeds for a misfeed rate of one per 17,500 scans, which is competitive with the average of scanners in its speed range tested to date.

○ Canon offers a one-year limited warranty for the imageFORMULA DR-M160.

	Malfunctions	Meter Count (Scans)
Meter count (beginning of test)		0
End of test period		35,000
Total misfeeds/misfeed rate	2/one per 17,500 scans	
Total Malfunctions	0	

MEDIA HANDLING   VERY GOOD

— The Canon imageFORMULA DR-M160 features an automatic document feeder (ADF) with a capacity of 60 sheets, which is a lower capacity than offered by most other A4 scanners in its class.

+ While the unit's continuous scan setting accepts paper weights from 7- to 56-lb. bond, the manual feeding setting accommodates paper weights up to 68-lb. bond, both of which are competitive. Acceptable paper sizes from the ADF range from 2.0" x 2.1" to 8.5" x 118.1", which is longer than that supported by most other A4 devices tested in its class.

+ Thin Paper Mode (available via CapturePerfect) allows the scanner to pull delicate or thin paper into the scanner without damaging it.

+ The scanner's Folio Mode allows users to scan A3-size paper by folding it in half. The scanner's utility then digitally stitches both sides together as one document.

Media Types Scanned During Testing

Business cards	Yes
Checks	Yes
Credit cards	Yes
Embossed cards	Yes
ID cards	Yes
Long documents	Up to 118.1"
Carbonless forms	Yes
Wrinkled paper	Yes

BLI scans each test document unless otherwise prohibited by product documentation.

+ The imageFORMULA DR-M160 offers multi-feed detection, which is typical of units in this speed range. However, the control panel offers a Double-Feed Release hard key that detects double feeds as they happen, allowing users to ignore double feeds at the control panel. In addition, the Double-Feed Retry feature returns the document to the ADF and re-feeds it.

○ This unit offers a continuous-feed feature that allows users to add pages to a batch after the device finishes scanning.

+ Batches can be separated by page count and patch code, which both performed well during testing.

+ In BLI's tests, the device handled a mixed batch of different sizes, types and weights of media without any problem.

+ This unit also scanned BLI's vertical market batch, containing an ID card, a HIPAA form, a medical history form and an insurance form, without any errors.

○ The document feeder offers face-down scanning in portrait orientation.

The imageFORMULA DR-M160 scan long documents up to 118.1".

⚠ EASE OF SETUP · GOOD

○ The imageFORMULA DR-M160 comes with two discs: one contains CaptureOnTouch, the drivers, CapturePerfect, eCopy PDF Pro Office and the user manual, while the other contains a copy of Kofax VRS. The typical installation for the first disc loads everything but the eCopy software, which can be added to the installation via the custom install option.

○ Installing all software and utilities (including Kofax VRS) required 41 mouse clicks, which is competitive with the average of comparable devices tested to date.

+ Users don't need to restart the computer during any stage of the install; some competitive devices tested required this extra step.

○ The input tray needs to be installed out of box, which is easy to do as it simply snaps in place.

○ To finish the installation, users must insert the AC cable into the power inlet, then connect the AC cable to a power outlet and connect it to a PC via a USB cable.
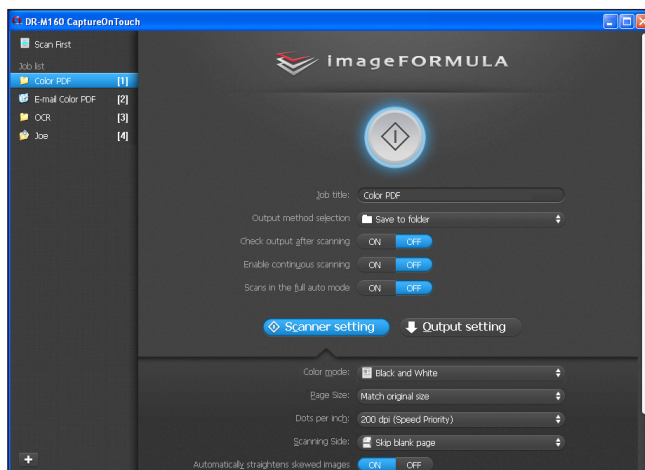
⚠ DRIVERS/SOFTWARE · EXCELLENT

+ TWAIN and ISIS drivers are included.

○ The drivers are Microsoft-certified.

+ BLI technicians noted above average overall ease of use from the scan utility; all settings are programmed using CaptureOnTouch. Users can set up nine scan profiles and preview all settings from the main screen of the driver.

+ Canon CaptureOnTouch has all of the most commonly used features on its main page, including the job name, output method, color mode, page size, resolution and various image enhancements. Users can either choose their settings and click the digital Start button from CaptureOnTouch, or choose one of the customized scan profiles located to the left of the main screen.

Canon CaptureOnTouch

+ To create a new scan profile, users simply select the + symbol at the bottom left of CaptureOnTouch, name the profile and select the various scan settings. Once configured, users can access all nine from the control panel via the Job Select button.

+ A few pre-set scan profiles are available upon setup, including E-mail, Color PDF and Scan First (scans the images first, then the user may choose where to save the file). Each pre-set profile can be customized by the end user.

○ A Help file with good information is available for the scan driver.

○ The driver shows a page count while scanning and a scan preview at the PC.

○ Pop-up error messages are displayed at the PC indicating a paper jam, for example.

+ The unit offers a Full Auto Mode, which enables all settings, acting as a dedicated scan profile, in addition to the nine customizable profiles.

Destination	
Network folder	Yes
Connected printer	Yes
Local folder	Yes
E-mail application	Yes
Integrated USB port	No
Microsoft SharePoint	Yes
Other back-end applications	Any TWAIN-compliant application

File Type	
PDF	Yes
Encrypted PDF	No*
Searchable PDF	No*
Single-page TIFF	Yes
Multi-Page TIFF	Yes
JPEG	Yes
Other	BMP, PPTX

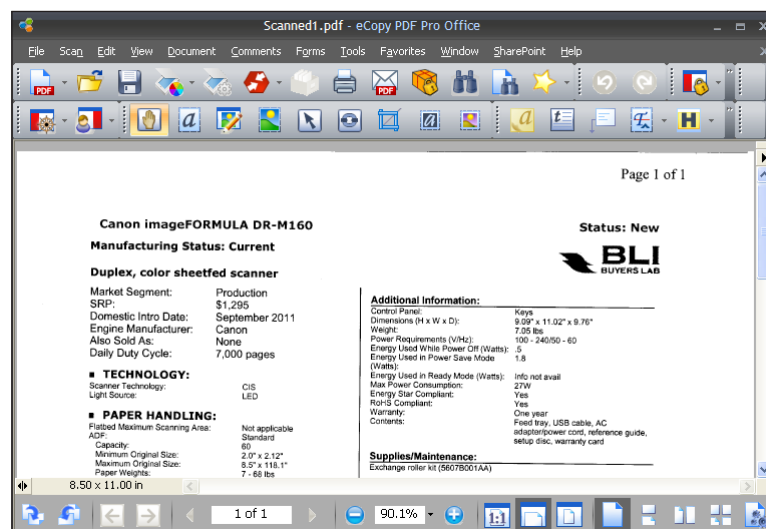*Available through the bundled Canon CapturePerfect software

WORKFLOW ANALYSIS   VERY GOOD
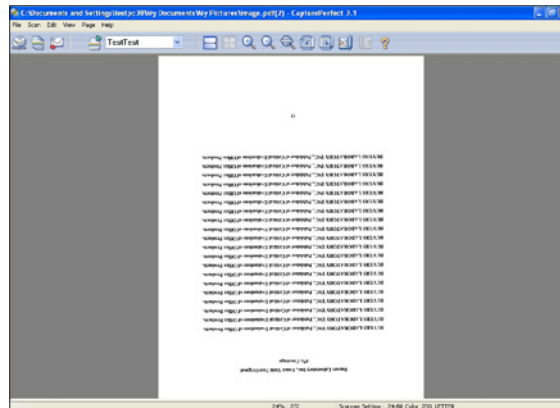
+ The imageFORMULA DR-M160 comes bundled with Canon CapturePerfect 3.1 and eCopy PDF Pro Office, as well as Kofax VRS.

+ eCopy PDF Pro Office is a PDF conversion application with editing capabilities that also embeds a PDF creation button in a variety of programs, including the Microsoft Office suite (Word, Excel PowerPoint and Outlook), Internet Explorer and Lotus Notes.

eCopy PDF Pro Office

+ Canon CapturePerfect is a scan routing solution that provides an additional 100 custom-izable scan profiles for saving frequently used scan settings and destinations. Additional features include various image enhancements, OCR functionality for text-searchable PDF files and batch separation. Scanned documents can be saved as TIFF, BMP, JPEG, PDF (PDF/A, searchable PDF, standard PDF, password-protected PDF) and PowerPoint files. Users can scan to folder, an e-mail application, a printer and Microsoft SharePoint. Cap-turePerfect also allows users to back up and restore saved scan settings.

Canon CapturePerfect

+ Kofax VRS is a dedicated image processing solution that provides more advanced image editing tools than typically found in scan drivers and utilities. Kofax VRS can integrate with Canon CapturePerfect to allow users to scan to CapturePerfect and route the scanned image directly to VRS for post-scan editing. Some VRS settings can also be added to CapturePerfect scan jobs for image processing while scanning.

+ Users of the imageFORMULA DR-M160 can leverage these programs by configuring one of the nine scan profiles to send a scanned document directly to the application. For example, users can program a profile to send a color JPG image to eCopy PDF Pro Office to create a searchable PDF, or route it through CapturePerfect to send the file to SharePoint, for example.

⚠ IMAGE PROCESSING FEATURES   VERY GOOD

+ The Canon imageFORMULA DR-M160 offers a very good selection of image processing features, including automatic color detection, auto page-size detection, blank-page removal, de-skew, smoothing, background removal, edge emphasis, moiré reduction, shadow cropping, de-speckle and gamma adjustments. While most of these features are common among scanners in this class, the unit's shadow cropping, edge emphasis and moiré reduction features are unique for models in this category.

— Unlike most other competitive units tested, the imageFORMULA DR-M160 lacks a reverse image feature.

+ With Kofax VRS, additional selections for auto cropping, line filter, hole fill, auto brightness and advanced clarity, which includes adjustments for auto contrast and intelligent cleanup, are available.

+ Canon's color drop-out function enables users to drop out red, green or blue to allow for improved OCR accuracy. During BLI's color drop-out test, only a few speckles remained when dropping out red.

○ The blank-page removal feature also performed well in the tests, which is typical of most other units tested.

+ The imageFORMULA DR-M160 scans at resolutions ranging from 150 to 600 dpi in all three scan modes, which is comparable to competitive scanners tested. This unit also offers an auto resolution feature that detects the content of documents and automatically determines the scan resolution—a feature not available on competitive devices.

HARDWARE EASE OF USE   VERY GOOD

+ The imageFORMULA DR-M160's control panel offers buttons for Power, Start, Stop, DFR (Double-Feed Release) and Job Select. The Job Select button allows users to select one of the nine user-customizable scan profiles configured using CaptureOn-Touch.

Canon imageFORMULA DR-M160 Control Panel

+ The Double-Feed Release button illuminates when a double feed has been detected, and can press the button to ignore the double feed.

+ BLI technicians noted that loading paper is simple, as there are no height guides to impede paper loading. Users simply adjust the side guides and place paper in the feeder.

+ The ADF offers paper-size and height indicators, as well as icons warning users to avoid scanning stapled or paper clipped documents.

○ Misfeed removal procedures are simple yet typical of most other units tested in that there is one misfeed area, which is easily accessed by pressing a gray button on the top of the scanner.

Misfeed Access Area

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EASE OF USER MAINTENANCE   VERY GOOD
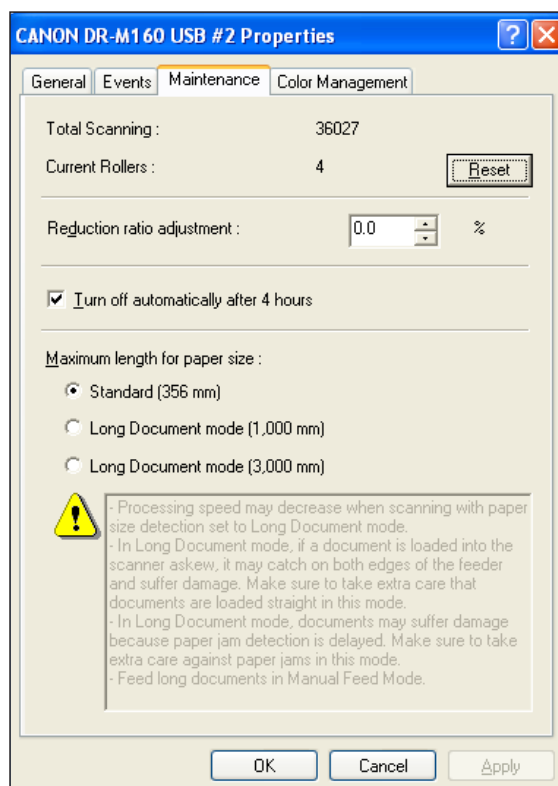
+ The imageFORMULA DR-M160's user-replaceable consumables include a feed roller and a retard roller, each with a recommended yield of up to 200,000 scans, which is slightly better than the average of competitive units tested to date.

+ The procedure for replacing the feed roller is better than with some other units tested. It has an easy to find, darker-shaded access cover. And after users remove the access cover, the roller can simply be lifted out without having to move or unlock any levers.

Feed Roller Replacement

○ The retard roller can be removed in the same fashion as most other third-party roller assemblies. Once the access cover is opened, which looks similar to the feed roller's cover, users pull a blue lever to the left to remove the roller.

○ Consumables must be removed prior to cleaning them, which is an extra step some other devices don't require.

○ Additional maintenance includes cleaning the scanner glass and the outside and inside of the scanner.

+ Total scan and roller maintenance counters are available via the Properties menu of the scanner.

Canon imageFORMULA DR-M160 Properties Window

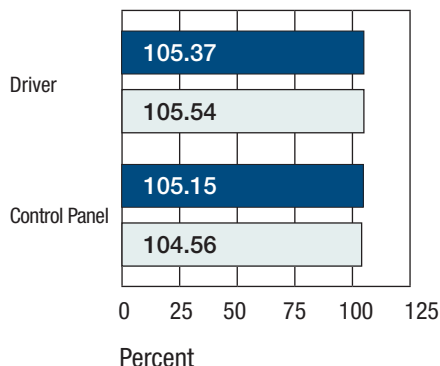## ⚠ PRODUCTIVITY   GOOD

○ With a rated speed of 60 ppm (120 ipm) in black-and-white and color modes, this unit's black-and-white and color speeds are competitive with the average when scanning multiple pages at 200 dpi using default settings (de-skew, blank-page removal enabled).

○ The unit's efficiency rate (the percentage of the rated speed at which it operates) is also competitive with the average of A4 scanners tested to date in black-and-white and color modes.
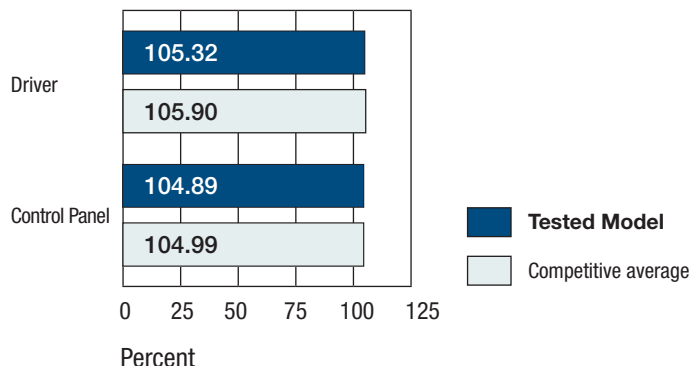
Tested Multi-Page Portrait Speed in PPM | Competitive Average

	Control Panel		Driver	
200 dpi				
Black-and-white	**63.09**	64.48	**63.22**	65.08
Color	**62.93**	56.13	**63.19**	56.63
300 dpi				
Black-and-white	**63.04**	55.99	**63.12**	56.51
Color	**43.38**	39.63	**43.38**	45.09

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Multi-Page Black Efficiency Rate

Driver
- 105.37 (Tested Model)
- 105.54 (Competitive average)

Control Panel
- 105.15 (Tested Model)
- 104.56 (Competitive average)

Percent: 0, 25, 50, 75, 100, 125

Multi-Page Color Efficiency Rate

Driver
- 105.32 (Tested Model)
- 105.90 (Competitive average)

Control Panel
- 104.89 (Tested Model)
- 104.99 (Competitive average)

Percent: 0, 25, 50, 75, 100, 125

■ **Tested Model**
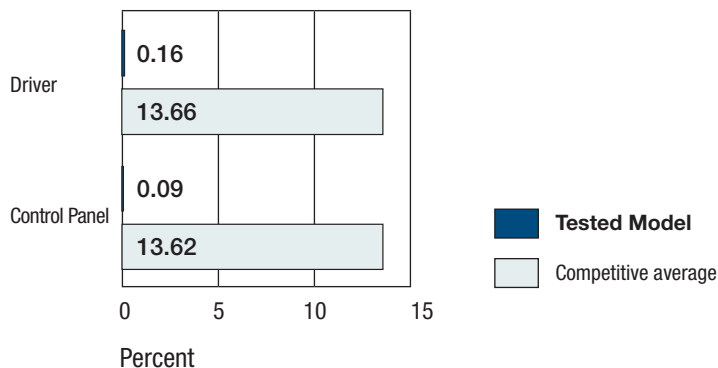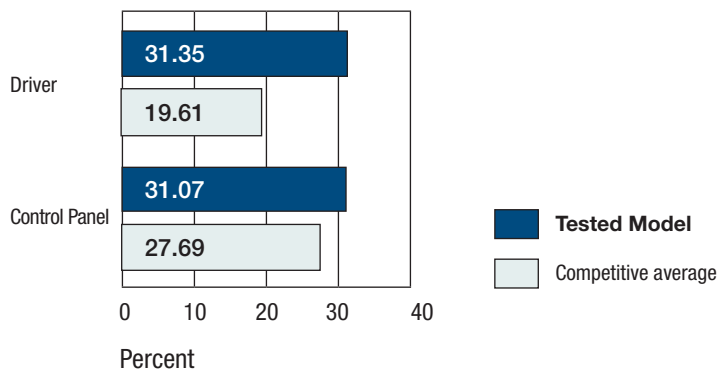□ Competitive average

The efficiency rate is the percentage of the rated speed at which the unit operates at 200 dpi for both black and color scan modes. The closer the rate is to 100%, or if it exceeds 100%, the more efficient the unit.

% Decrease* In Black Scan Speed At 300 dpi Versus 200 dpi

Driver
- 0.16 (Tested Model)
- 13.66 (Competitive average)

Control Panel
- 0.09 (Tested Model)
- 13.62 (Competitive average)

Percent: 0, 5, 10, 15

■ **Tested Model**
□ Competitive average

* Note that a rate of 0% or less indicates that there is no slowdown or an increase in speed when increasing the resolution.

% Decrease* In Color Scan Speed At 300 dpi Versus 200 dpi

Driver
- 31.35 (Tested Model)
- 19.61 (Competitive average)

Control Panel
- 31.07 (Tested Model)
- 27.69 (Competitive average)

Percent: 0, 10, 20, 30, 40

■ **Tested Model**
□ Competitive average

* Note that a rate of 0% or less indicates that there is no slowdown or an increase in speed when increasing the resolution.

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○ When increasing the resolution to 300 dpi, this unit experienced virtually no slowdown in black-and-white mode and a slightly higher than average slowdown in color mode.

○ As with most other competitive scanners tested, there was no slowdown while duplex scanning in black-and-white mode. However, this unit experienced a slightly higher than average slowdown when duplex scanning in color mode at 200 dpi using default settings.

+ The unit's single-page scan speeds from the ADF are competitive to faster than average in all three scan modes (black-and-white, grayscale and color).

Tested Single-Page Portrait Speed in seconds | Competitive Average

	Control Panel		Driver	
200 dpi				
Black-and-white	**3.75**	5.03	**3.05**	4.17
Grayscale	**3.91**	5.08	**3.43**	4.24
Color	**3.66**	5.12	**3.53**	4.33
300 dpi				
Black-and-white	**3.84**	5.36	**3.25**	4.53
Grayscale	**3.81**	5.25	**3.16**	4.51
Color	**4.25**	5.72	**4.10**	4.86

⚠ FILE SIZE   VERY GOOD

○ When scanning multi-page documents using default settings, file sizes are larger than average in black-and-white mode and smaller than average in color mode.

+ File sizes when scanning single-page documents are larger than average in black-and-white mode and smaller than average in grayscale and color modes.

Tested File Size in KB | Competitive Average

	200 dpi		300 dpi	
Single-Page Black	**35**	29	**48**	47
Single-Page Grayscale	**64**	222	**103**	397
Single-Page Color	**73**	216	**121**	453
Multi-Page Black	**1,027**	775	**1,336**	1,122
Multi-Page Color	**1,990**	20,616	**3,703**	44,147

OCR PERFORMANCE

GOOD

○ The Canon imageFORMULA DR-M160 (when using Canon CapturePerfect) exhibited above average OCR accuracy when scanning BLI's Black test document at 200 dpi and competitive accuracy at 300 dpi.

○ Its accuracy rates when scanning BLI's Green and Red test documents were lower than average at 200 dpi and competitive at 300 dpi.

○ The accuracy rate when scanning BLI's Blue test document was competitive overall.

OCR Accuracy in percent | Competitive Average

	200-dpi Accuracy		300 dpi-Accuracy	
Black	**84.1**	75.1	**85.2**	83.0
Red	**72.0**	80.1	**85.0**	87.6
Blue	**78.0**	82.8	**92.5**	89.1
Green	**69.7**	76.9	**89.1**	85.0

Note that for OCR testing, BLI compares the unit's bundled OCR software results with those of other scanners tested. When OCR software is not provided, BLI tests OCR using Nuance OmniPage 17 Professional.

OTHER FEATURES

NOT RATED

+ The imageFORMULA DR-M160 is ENERGY STAR-qualified and RoHS-compliant.

+ Canon offers an optional flatbed scanner for scanning delicate or odd-shaped documents.

+ An optional barcode module is available for barcode recognition.

FOOTPRINT

GOOD

○ Weighing 7.05 pounds and measuring 11.02" wide x 9.76" deep x 9.09" high, the imageFORMULA DR-M160 offers a competitive footprint, but a lighter weight.

VALUE

EXCELLENT

+ The imageFORMULA DR-M160's price of $1,295 is lower than average compared with competitive A4 scanners available.

+ The imageFORMULA DR-M160 has a projected total cost of ownership of $3,433 over a three-year period, which equals an estimated total cost per scan of 0.062¢—a lower than average projected cost when compared with competitive A4 devices currently on the market. This estimation was based on a daily scan volume of 7,000 sheets and includes the device's list price, a two-year extended warranty and Canon's Exchange Roller Kit.

	Canon imageFORMULA DR-M160	Competitive Average
Device Suggested Retail Price	$1,295	$1,909
Three-Year Warranty Cost	$225	$386
Maintenance Kit Cost	$69	$57
Rated Yield Between Kits	200,000	290,909
Total Cost of Ownership (3 years)	$3,433	$3,844
Estimated Cost per Scan	0.062¢	0.101¢

The competitive average includes comparable scanners currently available in the United States. All values are based on manufacturers' suggested retail pricing.

SUPPORTING TEST DATA

Test Environment: This product was tested in BLI's 10,000-square-foot test lab, in an environment monitored by a Honeywell Temp/RH chart recorder, which replicates typical office conditions.

Test Equipment: A PC running Microsoft XP Professional, based on a 2.8-GHz Intel P4 processor with 1-GB memory and a 50-GB hard drive. The scanner is connected to the PC via a USB cable.

Test Duration: Products are tested for two weeks, one week of which consists of a reliability test during which the product is run at its manufacturer-rated duty cycle.

Tested Configuration: Base unit.

Test Procedures: The test methods and procedures employed by BLI in its lab testing include BLI's proprietary procedures. An industry-standard KATUN test original, as well as BLI's 6% coverage original, are used in the speed tests. BLI's test is designed to replicate real-world use over an eight-hour workday, and as such includes a mix of various types and sizes of documents, color and black-and-white, legal size and letter size, single-sided and double-sided. Tested originals include lightweight invoices, checks, business cards, heavier card stocks, credit cards, ID cards and embossed cards, when supported. Speed tests are conducted in black-and-white, grayscale and color modes using a single page and a stack of pages that is equal to double the unit's manufacturer-rated scan speed. Speed tests are performed at 200-dpi resolution using single-sided pages and default settings, but a test is conducted to check for any slowdowns in duplex mode. Speed tests are also conducted at 300 dpi to gauge the degree of slowdown at high resolutions. The speed is measured from the time the technician presses the scan button to the time the trail edge of the last document exits the feeder both for scans sent from the driver and for scans sent via one-touch key. OCR tests are performed with all pertinent image processing features enabled at 200 dpi and 300 dpi using four clean, good-quality test documents in black, red, blue and green font colors. Each document contains the same phrase repeated in various font sizes and types.
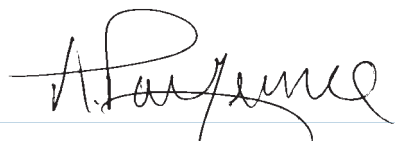
CERTIFICATE OF RELIABILITY

Awarded to

CANON U.S.A., INC.

for the performance of the

Canon imageFORMULA DR-M160

in BLI's in-house durability test.

BUYERS LABORATORY
2011
BLI
RELIABILITY CERTIFIED
LAB TESTED

ANTHONY F. POLIFRONE
MANAGING DIRECTOR

OCTOBER 2011

DATE

This is to certify that when subjected to a 35,000-sheet Buyers Lab durability test,
the Canon imageFORMULA DR-M160 proved to be a highly reliable product.

BUYERS LABORATORY INC.

THE LEADING INDEPENDENT OFFICE PRODUCTS TEST LAB AND BUSINESS CONSUMER ADVOCATE

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